

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF THE CLAIMS

1-3. (Cancelled)

4. (Currently Amended) The method of claim 3 32, wherein creating said hole further comprises creating said hole such that the diameter of the first member and the diameter of the metal member differ by about 0.1% to about 0.3% of the diameter of the first member.

5. (Cancelled)

6. (Currently Amended) ~~The method of claim 3~~ A method of attaching a first member of one of quartz and a ceramic to a metal member to form a joined structure, the first member being a substantially cylindrical member, the method comprising:
creating a hole of substantially circular cross-section in said metal member, the hole having a diameter that is smaller (in size than the size) than the diameter of the first member over a temperature range of the joined structure in use;
heating the metal member to a temperature sufficient to expand the hole to allow insertion of said first member in the hole;
inserting a portion of said first member into said hole; and
cooling the metal member to form the joined structure of the first member and the metal member, wherein forming said hole further comprises forming a hole having a diameter that smoothly and progressively reduces in diameter toward the interior thereof, from a diameter at a mouth of the hole of at least the diameter of the first member over said temperature range to said diameter that is smaller in size than said first member in the hole, thereby reducing tensile stress gradients in the first member of the joined structure.

7. (Currently Amended) The method of claim 3 32, further comprising

forming a finely tapered lip in the metal member about the mouth of said hole, prior to inserting said portion of said first member.

8. (Original) The method of claim 7, wherein said cooling causes deformation of the lip of said metal member about said mouth of said hole, thereby reducing tensile stress gradients in the first member of the joined structure.

9. ~~The method of claim 3~~ A method of attaching a first member of one of quartz and a ceramic to a metal member to form a joined structure, the first member being a substantially cylindrical member, the method comprising:

creating a hole of substantially circular cross-section in said metal member, the hole having a diameter that is smaller in size than the diameter (size) of the first member over a temperature range of the joined structure in use;

heating the metal member to a temperature sufficient to expand the hole to allow insertion of said first member in the hole;

inserting a portion of said first member into said hole; and

cooling the metal member to form the joined structure of the first member and the metal member, wherein said metal member comprises a metallic proof mass and said first member comprises a portion of a quartz structure of a gravity sensor.

10-13. (Cancelled)

14. (Currently Amended) The method of claim 4 32, wherein said metal member ~~structure~~ comprises invar.

15-23. (Cancelled)

24. (New) A method of attaching a first member of one of quartz and a ceramic to a metal member to form a joined structure, the first member being a substantially cylindrical member, the method comprising:

creating a hole of substantially circular cross-section in said metal member, the hole having a diameter that is smaller (in size than the size) than the

diameter of the first member over a temperature range of the joined structure in use;

heating the metal member to a temperature sufficient to expand the hole to allow insertion of said first member in the hole;

inserting a portion of said first member into said hole; and
cooling the metal member to form the joined structure of the first member and the metal member, wherein said metal member comprises an adjustable stop for limiting range of movement of a proof mass in a gravity sensor.

25. (New) The method of claim 24, wherein creating said hole further comprises creating said hole such that the diameter of the first member and the diameter of the metal member differ by about 0.1% to about 0.3% of the diameter of the first member.

26. (New) The method of claim 24, further comprising forming a finely tapered lip in the metal member about the mouth of said hole, prior to inserting said portion of said first member.

27. (New) The method of claim 26, wherein said cooling causes deformation of the lip of said metal member about said mouth of said hole, thereby reducing tensile stress gradients in the first member of the joined structure.

28. (New) A method of attaching a first member of one of quartz and a ceramic to a metal member to form a joined structure, the first member being a substantially cylindrical member, the method comprising:

creating a hole of substantially circular cross-section in said metal member, the hole having a diameter that is smaller (in size than the size) than the diameter of the first member over a temperature range of the joined structure in use;

heating the metal member to a temperature sufficient to expand the hole to allow insertion of said first member in the hole;

inserting a portion of said first member into said hole; and
cooling the metal member to form the joined structure of the first member and the metal member, wherein said metal member comprises at least a portion of an enclosure and

supports for a gravity sensor.

29. (New) The method of claim 24, wherein creating said hole further comprises creating said hole such that the diameter of the first member and the diameter of the metal member differ by about 0.1% to about 0.3% of the diameter of the first member.

30. (New) The method of claim 24, further comprising forming a finely tapered lip in the metal member about the mouth of said hole, prior to inserting said portion of said first member.

31. (New) The method of claim 26, wherein said cooling causes deformation of the lip of said metal member about said mouth of said hole, thereby reducing tensile stress gradients in the first member of the joined structure.

32. (New) A method of attaching a first member of one of quartz and a ceramic to a metal member to form a joined structure, the first member being a substantially cylindrical member, the method comprising:

creating a hole of substantially circular cross-section in said metal member, the hole having a diameter that is smaller in size than the diameter of the first member over a temperature range of the joined structure in use;

heating the metal member to a temperature sufficient to expand the hole to allow insertion of said first member in the hole;

inserting a portion of said first member into said hole; and

cooling the metal member to form the joined structure of the first member and the metal member, wherein said metal member comprises a metallic proof mass and said first member comprises a portion of a structure of a gravity sensor.